

## AUTHOR INDEX

Adams, M. E., see Oliven, A., 313

Badier, M., Barthélémy, P., Soler, M. and Jammes, Y., *In vivo and in vitro* studies on cold-induced airway response in normal and sensitized rabbits, 1

Baker, D. G. and Don, H., Reversal of the relation between respiratory drive and airway tone in cats, 21

Banzett, R. B., see Wang, N., 111

Barthélémy, P., see Badier, M., 1

Bartlett, Jr., D. and St. John, W. M., Influence of lung volume on phrenic, hypoglossal and mylohyoid nerve activities, 97

Bartlett, Jr., D., see Daubenspeck, J. A., 87

Bassett, D. J. P., Bowen-Kelly, E. and Bierkamper, G. G., Adaptation of a perfused rat hemidiaphragm preparation to the study of intermediary metabolism, 163

Bénichou, M., see Lorino, A. M., 155

Bierkamper, G. G., see Bassett, D. J. P., 163

Bohn, B., see Kister, J., 367

Bowen-Kelly, E., see Bassett, D. J. P., 163

Bureau, M. A., see Carroll, J. L., 343

Butler, J. P., see Wang, N., 111

Caldeira, M. P. R., Saidiva, P. H. N. and Zin, W. A., Vagal influences on respiratory mechanics, pressures, and control in rats, 43

Carroll, J. L. and Bureau, M. A., Peripheral chemoreceptor  $\text{CO}_2$  response during hyperoxia in the 14-day-old awake lamb, 343

Cherniack, N. S., see Chonan, T., 383

Chien, C.-T., see Hwang, J.-C., 175

Chonan, T., ElHefnaway, A. M., Simonetti, O. P. and Cherniack, N. S., Rate of elimination of excess  $\text{CO}_2$  in humans, 383

Chu, C., see Jones, D. R., 243

Comis, A., see Holland, R. A. B., 69

Crance, J. P., see Marchal, F., 201

Daubenspeck, J. A., Pichon, D., Knuth, K. V., Bartlett, Jr., D. and St. John, W. M., An in-expensive servo-respirator based upon regulation of a shunt resistance, 87

De Troyer, A., see Ninane, V., 31

Don, H., see Baker, D. G., 21

ElHefnaway, A. M., see Chonan, T., 383

Epstein, M. A. F., see Fletcher, P. R., 133

Epstein, R. A., see Fletcher, P. R., 125, 133

Fardiy, E. E., Sanii, M. R. and Thiliveris, J. A., Fetal lung growth: influence of maternal hypoxia and hyperoxia in rats, 225

Fedde, M. R., see Orr, J. A., 211

Fletcher, P. R. and Epstein, R. A., Frequency dependence of dead space during high-frequency ventilation in rhesus monkeys, 125

Fletcher, P. R., Epstein, R. A. and Epstein, M. A. F., Effective dead space of differently shaped airways during high-frequency ventilation of a  $\text{CO}_2$ -producing lung model, 133

Fordyce, W. E. and Kanter, R. K.: Arterial-end tidal  $\text{P}_{\text{CO}_2}$  equilibration in the cat during acute hypercapnia, 257

Fredberg, J. J., see Wang, N., 111

Gallina, C., see Marchal, F., 201

Gandevia, S. C. and Plassman, B. L., Responses in human intercostal and truncal muscles to motor cortical and spinal stimulation, 329

Gilmartin, J. J., see Ninane, V., 31

Gray, A. T., see Hopleyman, S. C., 279

Guz, A., see Hamilton, R. D., 145

Hamilton, R. D., Winning, A. J., Horner, R. L. and Guz, A., The effect of lung inflation on breathing in man during wakefulness and sleep, 145

Haouzi, P., see Marchal, F., 201

Harf, A., see Lorino, A. M., 155

Hopleyman, S. C. and Gray, A. T., Estimating steady-state  $\text{DL}_{\text{O}_2}$  with nonlinear dissociation curves and  $\dot{V}\text{A}/\dot{Q}$  inequality, 279

Hodson, W. A., see Jackson, J. C., 291

Holland, R.A.B., Rimes, A.F., Comis, A. and Tyndale-Biscoe, C.H., Oxygen carriage and carbonic anhydrase activity in the blood of a marsupial, the Tammar Wallaby (*Macropus eugenii*), during early development, 69

Horner, R.L., see Hamilton, R.D., 145

Hwang, J.-C. and St. John, W.M., Respiratory-modulated activities of motor units of the facial nerve, 189

Hwang, J.-C., Chien, C.-T. and St. John, W.M., Characterization of respiratory-related activity of the facial nerve, 175

Jackson, J.C., Palmer, S., Wilson, C.B., Standaert, T.A., Truog, W.E., Murphy, J.H. and Hodson, W.A., Postnatal changes in lung phospholipids and alveolar macrophages in term newborn monkeys, 291

Jammes, Y., see Badier, M., 1

Jones, D.R. and Chu, C., Effect of denervation of carotid labyrinths on breathing in unrestrained *Xenopus laevis*, 243

Kanter, R.K., see Fordyce, W.E., 257

Kelsen, S.G., see Oliven, A., 313

Kister, J., Marden, M.C., Bohn, B. and Poyart, C., Functional properties of hemoglobin in human red cells: II. Determination of the Bohr effect, 367

Knuth, K.V., see Daubenspeck, J.A., 87

Ko, W.-C. and Lai, Y.-L., Cyclic GMP affecting the tracheal nonadrenergic noncholinergic inhibitory system, 355

Lai, Y.-L., see Ko, W.-C., 355

Lee, L.-Y. and Morton, R.F., Reflex bradypnea elicited by cigarette smoke inhaled through an isolated larynx, 303

Lohda, S., see Oliven, A., 313

Lorino, A.M., Bénichou, M., Macquin-Mavier, I., Lorino, H. and Harf, A., Respiratory mechanics for assessment of histamine broncho-pulmonary reactivity in guinea pigs, 155

Lorino, H., see Lorino, A.M., 155

Macquin-Mavier, I., see Lorino, A.M., 155

Marchal, F., Haouzi, P., Gallina, C. and Crance, J.P., Measurement of ventilatory system resistance in infants and young children, 201

Marden, M.C., see Kister, J., 367

Mortola, J.P. and Rezzonico, R., Metabolic and ventilatory rates in newborn kittens during acute hypoxia, 55

Morton, R.F., see Lee, L.-Y., 303

Murphy, J.H., see Jackson, J.C., 291

Ninane, V., Gilmartin, J.J. and De Troyer, A., Changes in abdominal muscle length during breathing in supine dogs, 31

Oliven, A., Lohda, S., Adams, M.E., Simhai, B. and Kelsen, S.G., Effect of fatiguing resistive loads on the level and pattern of respiratory activity in awake goats, 313

Orr, J.A., Fedde, M.R., Shams, H., Röskenbleck, H. and Scheid, P., Absence of  $\text{CO}_2$ -sensitive venous chemoreceptors in the cat, 211

Paiva, M., see Verbanck, S., 273

Palmer, S., see Jackson, J.C., 291

Pichon, D., see Daubenspeck, J.A., 87

Plassman, B.L., see Gandevia, S.C., 329

Poyart, C., see Kister, J., 367

Rezzonico, R., see Mortola, J.P., 55

Rimes, A.F., see Holland, R.A.B., 69

Röskenbleck, H., see Orr, J.A., 211

Saldíva, P.H.N., see Caldeira, M.P.R., 43

Sanii, M.R., see Faridy, E.E., 225

Scheid, P., see Orr, J.A., 211

Schulz, A.R., Energy metabolism in the whole animal revisited, 11

Shams, H., see Orr, J.A., 211

Simhai, B., see Oliven, A., 313

Simonetti, O.P., see Chonan, T., 383

Soler, M., see Badier, M., 1

St. John, W.M., see Bartlett, Jr., D., 97

St. John, W.M., see Daubenspeck, J.A., 87

St. John, W.M., see Hwang, J.-C., 175, 189

Standaert, T.A., see Jackson, J.C., 291

Thliveris, J.A., see Faridy, E.E., 225

Truog, W.E., see Jackson, J.C., 291

Tyndale-Biscoe, C.H., see Holland, R.A.B., 69

Verbanck, S. and Paiva, M., Effective axial diffusion in an expansive alveolar duct model, 273

Wang, N., Banzett, R.B., Butler, J.P. and Fredberg, J.J., Bird lung models show that convective inertia effects inspiratory aerodynamic valving, 111

Wilson, C.B., see Jackson, J.C., 291

Winning, A.J., see Hamilton, R.D., 145

Zin, W.A., see Caldeira, M.P.R., 43

## SUBJECT INDEX

Abdominal muscles, 31, 329  
Acid-base balance, 367  
Airway resistance, 11, 201  
Airway smooth muscle, 1, 21, 155, 189, 355  
Allometric relations  
  respiratory -, 11, 201  
Alveolar-arterial  $P_{CO_2}$  difference, 257  
Alveolar gas  
  - composition, 257, 273  
Anesthesia, 175  
Animals  
  Amphibians, 243  
  cat, 21, 55, 87, 97, 175, 189, 211, 257  
  dog, 31, 303  
  goat, 313  
  guinea-pig, 155, 355  
  human, 145, 201, 329, 367, 383  
    infants, 201  
  lamb, 343  
  macaca, 291  
  marsupials, 69  
  rabbit, 1  
  rat, 43, 163, 225  
  rhesus monkey, 125  
Artificial respiration, 87, 97  
  
Birds  
  respiration in -, 111  
Blood flow  
  cerebral -, 383  
Blood gas  
  Bohr effect, 367  
  oxygen affinity, 63, 367  
  oxygen dissociation curve, 279  
Bohr effect, 367  
Brain, 383  
  cerebral cortex, 329  
Breathing pattern, 11, 303  
Breuer-Hering reflexes, 43, 97, 145  
Bronchomotricity, 121, 155, 189, 355  
Buccopharyngeal respiration, 243  
  
Capsaicin, 21  
Carbon dioxide  
  - stores, 383  
  ventilatory response to -, 31, 175, 211, 243, 343, 383  
Carbonic anhydrase, 69  
Cardiac output, 11  
Carotid sinus nerve, 243  
Cerebral blood flow, 383  
Chemoreceptors  
  arterial -, 243, 343  
Chest wall, 123  
Compliance  
  lung -, 155, 271  
Conductance, 155  
Control of breathing, 43, 329, 343, 383  
  Breuer-Hering reflexes, 43, 97, 145  
  carbon dioxide  
    ventilatory response to -, 35, 175, 211, 243, 343, 383  
  chemoreceptors  
    arterial, 243, 343  
  oxygen  
    ventilatory response to -, 343  
  
Dead space, 125  
Diaphragm, 163, 313  
Diffusion  
  alveolar-capillary, 257  
  - of gases, 273  
Donnan equilibrium, 367  
DNA, 225  
  
Electromyogram, 313  
Energy metabolism, 11  
Erythrocyte, *see* Red blood cell  
  
Facial nerve, 175  
Fatigue, 163, 313  
Fetus lung, 225, 291  
Frequency of breathing, *see* Breathing pattern

Gas stores  
  CO<sub>2</sub> stores, 383

Growth, 225

Heart, 11

Hemoglobin, 1, 69, 367

Hering-Breuer reflexes, 43, 97, 145

High-frequency ventilation, 125

Hill coefficient, 69

Histamine, 155

Hypercapnia, 31, 175, 211, 243, 343, 383

Hyperoxia, 343

Hypoglossal nerve, 97, 175

Hypoxia, 225

Intercostal muscles, 313, 329

Irritant receptor, 303

Larynx, 97, 303

Lung  
  compliance, 155, 271  
  diffusing capacity, 279  
  mechanoreceptors, 175, 189  
  surfactant, 291

Mechanics of breathing, 31, 111  
  airway resistance, 11, 201  
  chest wall, 123  
  compliance, 11, 155  
  pleural surface pressure, 155  
  pulmonary compliance, 201  
  surfactant, 291  
  trachea, 11

Mitochondrion, 163

Models  
  - in respiratory physiology, 383

Newborn, 55, 69, 291

Nicotine, 303

Oxygen, *see* Blood gas, Diffusion, Hypoxia and Tissue respiration  
  ventilatory response to -, 343

Oxygen consumption, 55

Oxygen dissociation curve, 279

P<sub>50</sub>, 69, 367

Parabronchial lung, 111

Periodic breathing, 55

pH, *see* Acid-base balance

Phrenic nerve, 21, 87, 97, 163, 175, 189

Placenta, 225

Pleural pressure, 155

Posture, 145

Pregnancy, 225

Pulmonary circulation, 225

Pulmonary diffusing capacity, 279

Pulmonary receptors, 175, 189

Red blood cell, 367

Regulation of respiration, *see* Control of breathing

Respiration in wakefulness, 145

Respiratory frequency, *see* Breathing pattern

Respiratory muscles, 313

Respiratory reflexes  
  - of Breuer-Hering, 43, 97, 145

Respiratory stimuli  
  carbon dioxide (hypercapnic) drive, 31, 175, 211, 243, 343, 383  
  oxygen drive, 343  
  *see also* Control of breathing

Skin  
  - respiration, 229

Sleep  
  respiration in -, 145

Smoking  
  ventilation in -, 303

Smooth muscle, 1, 21, 155, 189, 355

Surfactant, 291

Tidal volume  
  *see* Breathing pattern

Tissue respiration, 163

Trachea, 1, 11, 21, 355

Vagus nerve  
  block or section of -, 43, 97, 189

Ventilation/perfusion ratio, 279

Ventilatory response to hypercapnia, 31, 175, 211, 243, 343, 383

Ventilatory response to hyperoxia, 343

Ventilatory response to hypoxia, 55, 175, 225, 243, 343





## CONTENTS OF VOLUME 73

### No. 1, July 1988

<i>M. Badier, P. Barthélémy, M. Soler and Y. Jamme (France): In vivo and in vitro studies on cold-induced airway response in normal and sensitized rabbits (RSP 01420)</i>	1
<i>A. R. Schulz (U.S.A.): Energy metabolism in the whole animal revisited (RSP 01421)</i>	11
<i>D. G. Baker and H. Don (U.S.A.): Reversal of the relation between respiratory drive and airway tone in cats (RSP 01425)</i>	21
<i>V. Ninane, J. J. Gilmarin and A. De Troyer (Belgium, U.S.A.): Changes in abdominal muscle length during breathing in supine dogs (RSP 01424)</i>	31
<i>M. P. R. Caldeira, P. H. N. Saldiva and W. A. Zin (Brazil): Vagal influences on respiratory mechanics, pressures, and control in rats (RSP 01414)</i>	43
<i>J. P. Mortola and R. Rezzonico (Canada): Metabolic and ventilatory rates in newborn kittens during acute hypoxia (RSP 01422)</i>	55
<i>R. A. B. Holland, A. F. Rimes, A. Comis and C. H. Tyndale-Biscoe (Australia): Oxygen carriage and carbonic anhydrase activity in the blood of a marsupial, the Tammar Wallaby (<i>Macropus eugenii</i>), during early development (RSP 01417)</i>	69
<i>J. A. Daubenspeck, D. Pichon, K. V. Knuth, D. Bartlett, Jr. and W. M. St. John (U.S.A.): An inexpensive servo-respirator based upon regulation of a shunt resistance (RSP 01415)</i>	87
<i>D. Bartlett, Jr. and W. M. St. John (U.S.A.): Influence of lung volume on phrenic, hypoglossal and mylohyoid nerve activities (RSP 01416)</i>	97
<i>N. Wang, R. B. Banzett, J. P. Butler and J. J. Fredberg (U.S.A.): Bird lung models show that convective inertia effects inspiratory aerodynamic valving (RSP 01423)</i>	111
<i>P. R. Fletcher and R. A. Epstein (U.S.A.): Frequency dependence of dead space during high-frequency ventilation in rhesus monkeys (RSP 01418)</i>	125
<i>P. R. Fletcher, R. A. Epstein and M. A. F. Epstein (U.S.A.): Effective dead space of differently shaped airways during high-frequency ventilation of a CO<sub>2</sub>-producing lung model (RSP 01419)</i>	133

### No. 2, August 1988

<i>R. D. Hamilton, A. J. Winning, R. L. Horner and A. Guz (U.K.): The effect of lung inflation on breathing in man during wakefulness and sleep (RSP 01434)</i>	145
<i>A. M. Lorino, M. Bénichou, I. Macquin-Mavier, H. Lorino and A. Harf (France): Respiratory mechanics for assessment of histamine bronchopulmonary reactivity in guinea pigs (RSP 01426)</i>	155
<i>D. J. P. Bassett, E. Bowen-Kelly and G. G. Bierkamp (U.S.A.): Adaptation of a perfused rat hemidiaphragm preparation to the study of intermediary metabolism (RSP 01428)</i>	163
<i>J.-C. Hwang, C.-T. Chien and W. M. St. John (U.S.A., Republic of China): Characterization of respiratory-related activity of the facial nerve (RSP 01432)</i>	175
<i>J.-C. Hwang and W. M. St. John (U.S.A., Republic of China): Respiratory-modulated activities of motor units of the facial nerve (RSP 01433)</i>	189
<i>F. Marchal, P. Haouzi, C. Gallina and J. P. Crance (France): Measurement of ventilatory system resistance in infants and young children (RSP 01429)</i>	201
<i>J. A. Orr, M. R. Fedde, H. Shams, H. Röskenbleck and P. Scheid (F.R.G.): Absence of CO<sub>2</sub>-sensitive venous chemoreceptors in the cat (RSP 01435)</i>	211
<i>E. E. Faridy, M. R. Sanii and J. A. Thiliveris (Canada): Fetal lung growth: influence of maternal hypoxia and hyperoxia in rats (RSP 01430)</i>	225

<i>D. R. Jones and C. Chu (Canada): Effect of denervation of carotid labyrinths on breathing in unrestrained <i>Xenopus laevis</i> (RSP 01427)</i>	243
<i>W. E. Fordyce and R. K. Kanter (U.S.A.): Arterial-end tidal <math>P_{CO_2}</math> equilibration in the cat during acute hypercapnia (RSP 01431)</i>	257
<i>S. Verbanck and M. Paiva (Belgium): Effective axial diffusion in an expansile alveolar duct model (RSP 01436)</i>	273
 No. 3, September 1983	
<i>S. C. Hempelmann and A. T. Gray (U.S.A.): Estimating steady-state <math>Dl_{O_2}</math> with nonlinear dissociation curves and <math>\dot{V}A/\dot{Q}</math> inequality (RSP 01439)</i>	279
<i>J. C. Jackson, S. Palmer, C. B. Wilson, T. A. Standaert, W. E. Truog, J. H. Murphy and W. A. Hodson (U.S.A.): Postnatal changes in lung phospholipids and alveolar macrophages in term newborn monkeys (RSP 01441)</i>	289
<i>L.-Y. Lee and R. F. Morton (U.S.A.): Reflex bradypnea elicited by cigarette smoke inhaled through an isolated larynx (RSP 01442)</i>	301
<i>A. Oliven, S. Lohda, M. E. Adams, B. Simhai and S. G. Kelsen (U.S.A.): Effect of fatiguing resistive loads on the level and pattern of respiratory activity in awake goats (RSP 01443)</i>	311
<i>S. C. Gandevia and B. L. Plassman (Australia): Responses in human intercostal and truncal muscles to motor cortical and spinal stimulation (RSP 01438)</i>	325
<i>J. L. Carroll and M. A. Bureau (Canada): Peripheral chemoreceptor <math>CO_2</math> response during hyperoxia in the 14-day-old awake lamb (RSP 01440)</i>	339
<i>W.-C. Ko and Y.-L. Lai (U.S.A.): Cyclic GMP affecting the tracheal nonadrenergic noncholinergic inhibitory system (RSP 01445)</i>	351
<i>J. Kister, M. C. Marden, B. Bohn and C. Poyart (France): Functional properties of hemoglobin in human red cells: II. Determination of the Bohr effect (RSP 01444)</i>	363
<i>T. Chonan, A. M. ElHefnawy, O. P. Simonetti and N. S. Cherniack (U.S.A.): Rate of elimination of excess <math>CO_2</math> in humans (RSP 01437)</i>	379

